

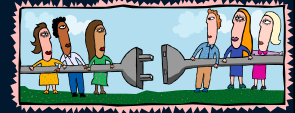
## To Micro-Grid or Not to Micro-Grid...

Barry Moline, Executive Director  
Florida Municipal Electric Association  
P.O. Box 10114, Tallahassee, FL 32302  
(850) 224-3314, fax: (850) 224-2831  
www.publicpower.com

August 18, 2003

## Public Power in Florida

- 32 municipal electric utilities
- 1.2 million customer meters
- Large Utilities
  - JEA: 368,000 customers
  - OUC: 169,000 customers
- Small Utilities
  - Bushnell: 1,045 customers
- 2,000+ nationwide



2

## Florida's Public Power Utilities



3

## Power Outage of 2003

- Caused by...
  - Trees?
  - Energy management systems (SCADA)?
  - Local T&D operators?
  - ISO seams?
- Success!!!
  - 75% on line within ONE hour
  - 90+% on line within 24 hours



4

## The Grid

- Third world?
- Huge infrastructure investment?
- Baloney!



5

To Micro-Grid or  
Not to Micro-Grid...

## Conclusion

# NO

# Thank You!

## Today

- Power supply snapshot
- Pros & cons
- Secret ingredients to success



## Power Supply Snapshot

"In order to know where you are going,  
you've got to see where you've been"

Anonymous

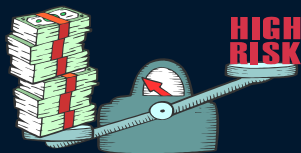
"You can't see what's ahead if you're  
lookin' in the rear-view mirror."

Barry Moline

## Power Supply Snapshot

"There is no way to create energy without  
any risk... It is a question of choice."

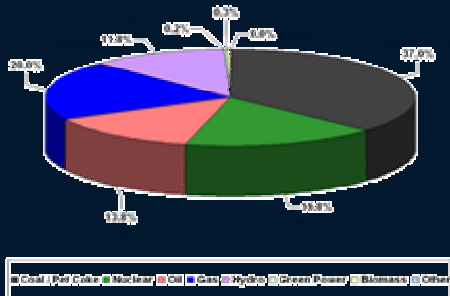
Alan Greenspan  
June 10, 2003 testimony to the  
House Energy and Commerce Committee



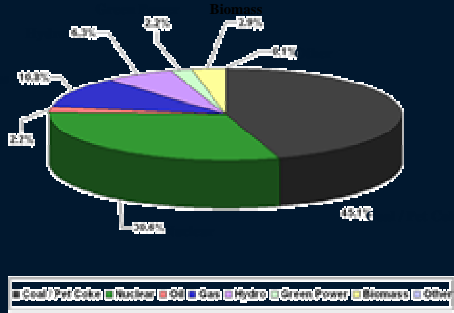
## Power Supply Snapshot

# Risk vs. Reward

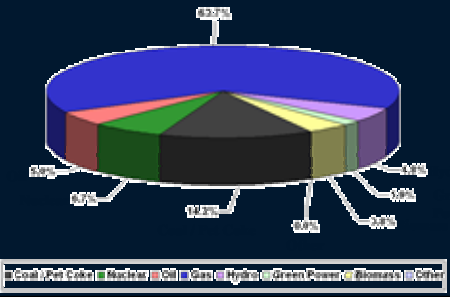
### Generation built in the 1970s



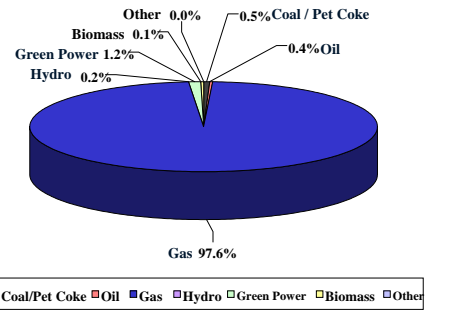
### Generation built in the 1980s



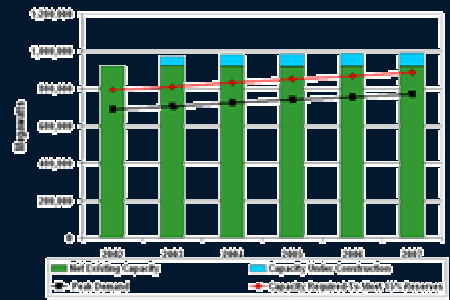
### Generation built in the 1990s



### Generation built in the 2000s

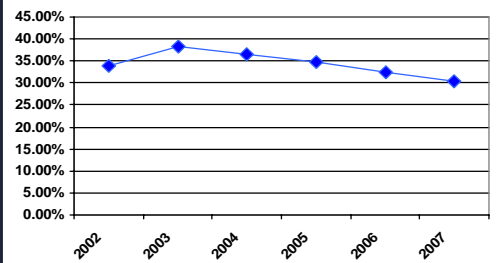


### Continental U.S. Summer Peak – Supply and Demand



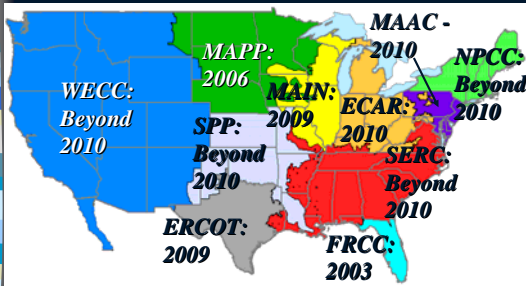
Demand Source: RDI – NERC OE-411 2002 2003 Forecast  
Supply Source: RDI Existing 2000, Standby, Operating, Under Construction, Retirements

### Continental U.S. Summer Peak – Reserve Margin



Demand Source: RDI – NERC OE-411 Forecast  
Supply Source: RDI Existing 2000, Standby, Operating, Under Construction, & Net Exchange

## Projection of Supply and Demand Balance by NERC Region

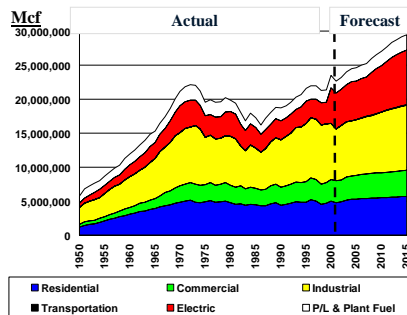


Demand Source: RDI - NERC OE-411 2002 Forecast  
Supply Source: RDI Existing 2000, Standby, Operating, Under Construction, Retirements & Net Exchange

## Natural Gas Near Term Outlook

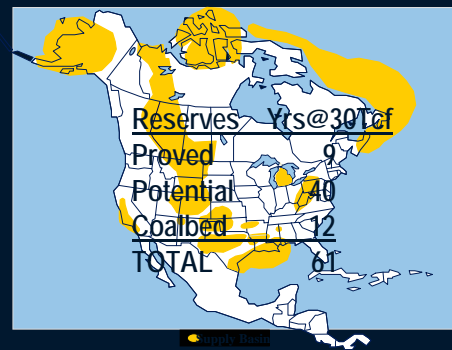
- High gas prices (volatility)
- Declining production for the last 6 quarters
- Industrial demand destruction
- Challenge to refill storage for winter

## Industry Outlook - Natural Gas Demand

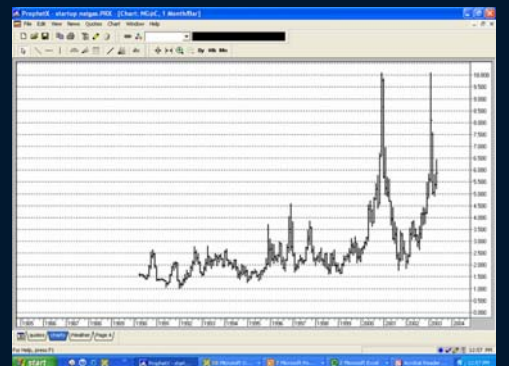


Source: DOE - Natural Gas Annual 1998, Natural Gas Monthly - March 2003 and Annual Energy Outlook 2003

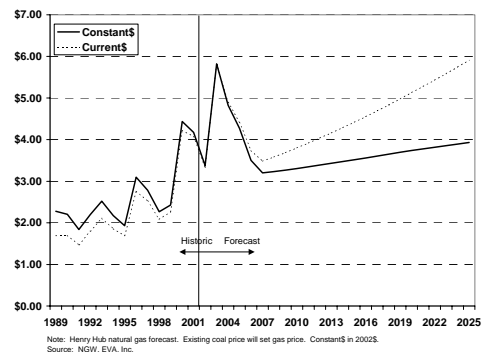
## Industry Outlook - Current U.S. Gas Supply



## Natural Gas Price Volatility



## Natural Gas Prices



Note: Henry Hub natural gas forecast. Existing coal price will set gas price. Constant\$ in 2002\$.  
Source: NGW, EVA, Inc.

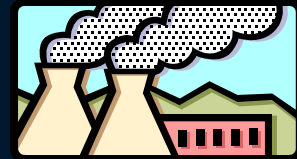
## Coal Generation Issues

- Large capital investment
- Long lead time to build
- 250-year coal supply
- Uncertain environmental issues

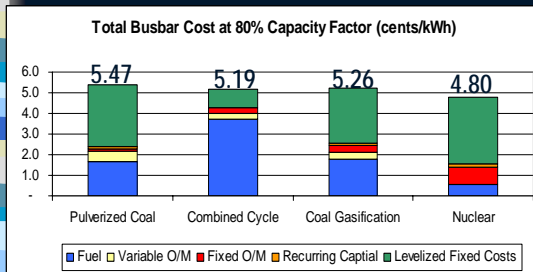


## Nuclear Generation Issues

- Regulatory / political pressure
- Capital cost uncertainty
- Long lead time to build
- Nuclear waste fuel disposal



## What is the best choice for customers?



Assumptions:  
-13% rate of return  
-45/10/45 capital structure

## Pros (to Incumbent)

- Reducing need for new generating capacity
- Relieving overloaded distribution feeders
- Reducing need for T&D expansion
- Back up power supply



## Cons (to Incumbent)

- Smaller customer base to spread costs
- Planning problems: standby power during peak periods
- Lower load factor resulting in higher generation costs
- Stranded generating costs



## Hurdles

- Incumbent utilities
- Incumbent utilities
- Incumbent utilities



## Hurdles

- **State legislatures**
  - Heavily influenced by incumbent utilities
  - What's in it for them (other than a good idea?)
- **State public service commissions**
  - How are remaining customers impacted?
- **Federal vs. State**
  - No campaign contributions
  - No property taxes
  - However, you do provide jobs



## Your To Do List

- Determine who the decision makers are
- Determine the benefits to the ones you want to leave behind
- Educate decision makers -- A marathon!
- Expect opposition
- Have thick skin -- it's about the idea, not you



## Secret Ingredients

- **An Energy Partner that is truly a Partner**
  - Experience
  - Financially sound
  - Long-term perspective
  - Resources to do the job
  - Good contract with performance guarantees, penalties, and financial back up
- **Diversified Generation**
  - Are you sure you want to rely on natural gas?
  - Mix of microturbines and power supply blend with incumbent



## Persevere!



## Get back up if you fall!



## Use your head!



Be resourceful!



Keep it simple!



Fear NOTHING!



Prepare!



Thank  
YOU!